Aircraft and Special Equipment CENTER

ANNUAL REPORT
1954

UNITED STATES DEPARTMENT OF AGRICULTURE
PLANT PEST CONTROL BRANCH
AGRICULTURAL RESEARCH SERVICE

AIRCRAFT AND SPECIAL EQUIPMENT CENTER
Methods Improvement Section
PLANT PEST CONTROL BRANCH
Agricultural Research Service
UNITED STATES DEPARTMENT OF AGRICULTURE

ANNUAL REPORT
Calendar Year 1954

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*Transferred to position of Administrative Officer,
Plant Pest Control Branch, September 1954

**Moved from Oklahoma City, Oklahoma, August 1954

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CHARTS AND TABLES

INTRODUCTION

During the calendar year 1954, the Aircraft and Special Equipment Center became a part of the Methods Improvement Section of the Plant Pest Control Branch. This action, current developments, and other reorganization within the Department encouraged some change in emphasis on the various programs of the Center.

Direct assistance in the application of insecticides on control projects such as had been given in previous years was substantially concluded. Greater effort was placed on the improvement of contract forms and the supervision of contract control operations. This permitted some reduction in pilot and shop personnel. It also permitted more work to be done on the appraisal and improvement of special machines used by the Branch.

During the year special progress was made in coordinating information on equipment research and equipment manufacture, improving the quality of assistance given to Branch projects, cooperators, and the public.

At the end of the year plans were being made to adjust further the program of the Center, with special relation to the overall functions of the Methods Improvement Section.

ORGANIZATION

During the reporting period, the Aircraft and Special Equipment Center was transferred from Oklahoma City, Oklahoma, to Beltsville, Maryland. The Office was moved in August and was set up in the Administration Building of the Plant Industry Station.

To reduce the cost of moving, employees volunteered to drive the Center's three Government vehicles to Beltsville. Their wives followed in their personal automobiles. The aircraft were ferried to Beltsville as field assignments were completed.

Shop equipment, tools, and supplies were moved to the airport located at the Agricultural Research Center during June, July, and August. The Forest Service, which has a hangar and shop at that airport, provided temporary storage for the shop equipment and placed the shop at our disposal until other facilities were provided.

At first it was planned to erect a separate hangar and shop. Funds were set aside for that purpose. Consideration also was given to the mutual advantages that would be gained by building only a hangar and consolidating our shop with that of the Forest Service. This would avoid duplication of shop facilities, permit more economical use of personnel and equipment, provide for ready exchange of ideas and assistance by representatives of the two activities, and also materially reduce the initial cost of providing these facilities. This latter plan was being put into effect at the end of the year.

Roy Lamoureaux, a permanent pilot, resigned in January to accept a flying position with a commercial concern.

In March, due to increased shop work occasioned by requests for assistance from the Forest Service, one mechanic's helper was employed for several months on a temporary basis.

Franeida Frid, clerk-stenographer, resigned in August when the Center Office was moved to Beltsville.

In September, John S. Riss transferred from the Center to become Administrative Officer for the Plant Pest Control Branch with offices in Washington, D. C.

Margot Kennedy transferred from the Soil and Water Conservation Research Branch in November to fill the vacancy of Clerk-stenographer.

At the request of the Economic Insect Survey Section, arrangements were completed to provide that activity with office space and stenographic assistance. Through a transfer of funds, we will be reimbursed for the office space and one-half of Miss Kennedy's salary.

INFORMATIONAL SERVICES

During 1954, approximately 30 percent of the Center's visitors were associated with the U. S. Department of Agriculture. The remainder represented a variety of other interests.

Approximately 25 percent of the requests for information received were from foreign sources. Seventy-five percent were from commercial agricultural aircraft operators, Federal, State, cooperating agencies, and other commercial concerns. The majority of the requests were for information relative to aircraft, dispersal apparatus, and other special-purpose equipment for pest control.

Meetings

The Center cooperated throughout the year with Federal and State agencies, aerial applicator associations, and other organizations by actively participating in various spray schools, short courses, and conferences. The major programs and conferences attended are as follows:

Aerial Spray Operators' Short Course,
Lincoln, Nebraska

Short Course on Dusting and Spraying,
Fargo, North Dakota

Aerial Applicators' Meeting,
Casper, Wyoming

Sixth Annual Aerial Spraying and Dusting Conference,
Yakima, Washington

National Aviation Trades Association Annual
Convention, Miami, Florida

Pesticides and Application Committee,
Washington, D. C.

Third Annual Texas Agricultural Aviation Conference
and Short Course, College Station, Texas

Project Leaders' Conference,
Washington, D. C.

Inter-Departmental Weed Conference,
Washington, D. C.

At the request of Colorado and Wyoming State Officials, through the Grasshopper Control Project, the Center participated in several meetings to advise on state aircraft spraying contracts for grasshopper control. Assistance was also given the State of Colorado in formulating State pest control regulations for agricultural aircraft.

Personnel of the Center participated in the Second Agricultural Aviation Research Conference in Chicago. During the course of the Conference, the Director of the Center was appointed chairman of a six-man committee to draft resolutions of research that needed to be done and also to amend some of the resolutions drawn up at the first conference in 1953.

Conflicting commitments prevented the acceptance of an invitation to speak at the National Cotton Council Meeting in Dallas, Texas, December 2-3.

Publications

Farmers' Bulletin No. 2062 "How to Spray the Aircraft Way" received favorable reviews in various magazines and trade publications. Personal expressions from reviewers have already indicated that this bulletin is being well received by those to whom it is directed. This publication helps to meet a pressing and increasing demand by farmers and pest control interests for general information on aircraft spraying.

Material was provided for an article entitled "Research Helps Agricultural Aviation" in the November 1954 issue of Agricultural Research.

At the request of the Office of Information, material was prepared for use in the 1954 Aircraft Yearbook.

COOPERATIVE WORK

The Aircraft and Special Equipment Center cooperated extensively throughout the year with public agencies and industry groups. This included technical assistance on the selection of new equipment and on maintenance and modification of equipment currently in use. It also included assistance in connection with bid openings and the review and revision of present contract specifications toward a contract more acceptable to all concerned.

Ground Equipment

In the field of ground equipment, considerable attention was given to acquiring or modifying equipment suitable for White-Fringed Beetle Control. A representative of the Center made an inspection trip to Macon, Georgia, to acquaint himself with the current problem and to discuss it further with Project personnel. The subject was also reviewed with R. A. Tate, during his

visit to Beltsville. Inquiries regarding suitable equipment were made of the Agricultural Engineering Research Branch. These were followed by correspondence with a number of manufacturers in an effort to locate equipment units requiring a minimum of modification.

The adaptation of a hand seeder to a wheelbarrow-type unit to broadcast granular insecticides was studied. This type of unit should prove effective under certain conditions for the application of granular insecticides in the control of both the Japanese beetle and white-fringed beetle.

At the request of the Entomology Research Branch, Garden City, Kansas, a Jeep-mounted sprayer was constructed to meet the special requirements of experimental work on small-grain insects and mites. Following the completion of this installation, the equipment was tested and calibrated.

The experimental collapsible spray cart constructed in 1953 for Cereal and Forage Insect Investigations aroused sufficient interest to warrant the construction of another unit, incorporating several desirable modifications. This has been done and drawings of it will be prepared, together with a brief description of its construction and performance.

Aircraft Equipment

The potential importance of granular insecticides has indicated that further study needs to be given to a spreading device for applying granular materials from aircraft. When released from an airplane, granular insecticides do not appear to follow the same pattern as dusts or sprays.

In this connection, at the end of the year, a request was being considered from the Personal Aircraft Research Center at Texas A & M College for the loan

of a Stearman airplane to conduct research work on swath distribution of various granular-type materials as well as sprays. In return for the use of the airplane, they have agreed to return it equipped with an improved spreader, based on the results of this research investigation. The potential benefits anticipated through this agreement will result in better equipment with which to make future experimental applications.

Contracts

Assistance was given to the Gypsy Moth Control Project in the revision of the aircraft spraying contract. The Center was requested to develop new contract specifications whereby the contractor would furnish the insecticide, transport it to airstrips, and apply it.

Similar consideration was also given to grasshopper control contract specifications. For one or two selected areas, the revised bid form will be similar to the new gypsy moth contract. Bidders will be invited to quote prices on one or more contract sections as follows: (1) provide insecticide solution, (2) transport, store, and provide loading facilities for the insecticide, (3) load and apply the insecticide, or (4) all of the above materials and services.

Comments were invited from projects identified with aircraft contracts and their views as well as those of leading aerial applicators were given consideration in the current revision of contract bid forms.

Assistance was given to the Forest Service in the preparation of bids for contract spraying on a Pine Butterfly and Spruce Budworm Control project in Idaho.

The Forest Service office in Albuquerque, New Mexico, requested and was given assistance with a contract they propose to use on forest insect spraying programs in 1955.

Airplane Forms

In an effort to provide a uniform method for checking and recording the conformity of contracted aircraft to bid specifications, Form PPC 8-1(1-55), Aircraft Inspection Record, was prepared. This form provides for the description and condition of both the airplane and its dispersal equipment. The forms will be used by supervisory personnel of the Center during the final inspection and calibration of contract aircraft and filed for future reference.

Several variations of the Daily Flight Record forms used over the past years by projects operating aircraft were reviewed in an effort to standardize these forms. After consideration of the purpose for which the form is intended and the use each Project and Contractor may wish to make of it, a revision, Form PPC 8-2(1-55), Daily Airplane Record, was prepared. Copies have been furnished to Branch agencies using aircraft.

Copies of these forms are included in this report.

CONTROL WORK

Mormon Cricket Control

For spot work on Mormon cricket control which could not be performed conveniently under contract and for the further testing of dispersal equipment, a temporary pilot was engaged at the expense of the Grasshopper Control Project to operate Stearman Airplane #10 during

PPC 8-1
(1-55)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PEST CONTROL BRANCH

AIRCRAFT INSPECTION RECORD

AIRCRAFT

Make _____ Reg. No. _____

Inspected at _____ for _____

Owner _____

Address _____

License expires _____ Waiver: CAA _____ State _____ Local _____

Working speed _____ mph. Swath _____ ft. Output _____ gpm.

Spray capacity _____ gals. Approved load _____ gals. Pressure _____ psi.

Dump valves: No. used _____ Size _____ Dump rate _____ gpm.

Nozzles: No. used _____ Make _____ Orfice size _____

Remarks: _____

_____

ENGINE

Make _____ hp _____ Total hrs. _____

Hours since major overhaul _____ Hrs. last 3 months _____

Remarks: _____

_____

EQUIPMENT

- ☐ Gas & oil cap marking
- ☐ Brake on pump fan
- ☐ Leakproof spray system
- ☐ Airplane clean
- ☐ Gage line restriction
- ☐ Spray tank gage
- ☐ Shoulder harness
- ☐ Spray cap marking
- ☐ Eng. driven pump clutch
- ☐ Positive nozzle shut-off
- ☐ Minimum instruments
- ☐ Oil resistant hose
- ☐ Beaded tubing ends
- ☐ State agriculture license

Remarks: _____

_____

_____

_____

_____

Date _____ Inspected by _____

PPC 8-2
(1-55)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PEST CONTROL BRANCH

DAILY AIRPLANE RECORD

Date _____

Airplane No. _____ State _____ County _____

Locality _____ Pest _____

TRIP NO.	FLYING TIME Start	Stop	TRIP TIME	GALS. LBS.	ACRES	TRIP NO.	FLYING TIME Start	Stop	TRIP TIME	GALS. LBS.	ACRES
1						13					
2						14					
3						15					
4						16					
5						17					
6						18					
7						19					
8						20					
9						21					
10						22					
11						TOTALS					
12						TOTALS (from left col.)					
TOTALS						GRAND TOTALS					

COMMENTS: (Record all periods of aircraft shut-down and reasons therefor)

_____

_____

_____

Approved starting time _____ Actual starting time _____

Approved stopping time _____ Actual stopping time _____

_____ _____
Contracting Agency Contractor

By _____ By _____
Timekeeper's Signature Pilot's Signature

the 1954 season. This airplane was used in the control of scattered infestations of Mormon crickets in Idaho, Nevada, Utah, Wyoming, and Montana.

Pine Butterfly Control

Technical assistance was furnished the Forest Service prior to and during the pine butterfly control program in the Boise and Payette National Forests in Idaho. In conjunction with this assignment, a supervisory pilot was made available for calibration of contract aircraft at the work sites and when needed to inspect control applications.

Grasshopper Control

The Grasshopper Control Project was given assistance on several occasions in checking contract aircraft and pilots and in supervising control applications on grasshopper control programs. This assistance included advice during bid openings and recommendations for modification and adjustment of equipment. In some cases it required aerial inspection of infested areas upon which to base recommendations of the type of aircraft best suited to perform control work.

Gypsy Moth Control

Prior to and during the 1954 gypsy moth control program, the Center assigned supervisory pilot personnel to assist the Gypsy Moth Control Project and other cooperating agencies. A Cessna 180 supervisory plane was used for the inspections and technical direction of contract work on this program. Other cooperative work included technical assistance during the opening of bids for aerial contract spraying.

EXPERIMENTAL WORK

Japanese Beetle Control Experiments

The Center cooperated with the Japanese Beetle Control Project in experimental programs in Sheldon, Illinois, and Kentland, Indiana, involving the aerial application of both granular and liquid dieldrin insecticide, and in Coloma, Michigan, and Logansport, Indiana, involving the application of granular dieldrin only. An airplane and pilot were made available on each occasion to make a series of applications for the control of Japanese beetles. The work was done cooperatively by Federal and State agencies.

White-Fringed Beetle Control Experiments

Experiments with the application of several granulated insecticides by airplane were conducted cooperatively with the White-Fringed Beetle Control Project and the states of South Carolina and Georgia in February and March. Several plots were treated with granulated aldrin, dieldrin, chlordane, heptachlor, and toxaphene. An additional experiment involved the distribution of tobacco by-products treated with aldrin.

The information gained from these tests will serve as a basis for establishing a procedure for future operations by contract aircraft. It is anticipated that additional applications of this type will be conducted in 1955.

European Chafer Control Experiments

Airplane applications of granular dieldrin were made to drumlin pasture areas near Newark, New York, to study the effectiveness of this method of treatment in the control of the European chafer. The work was

done under the direction of the Japanese Beetle Control Project in cooperation with the Agricultural Experiment Station, Ithaca, New York.

Oak Brush Control Experiments

The Field Crops Reseach Branch requested assistance in an experimental oak brush control program in Oklahoma. To test new dispersal equipment, a Stearman and Piper Cub were made available for application of herbicides. The dispersal apparatus of both aircraft were adjusted so that they could discharge the solution from five nozzles as a coarse spray at the rate of 5 gallons per acre.

Pink Bollworm Experiments

During August and September, an airplane and pilot were supplied to make a series of experimental airborne trappings of the pink bollworm moth in Texas. The experiments involved periodic trapping at various altitudes up to 5,000 feet. Modification and installation of trapping devices were made by Center personnel at Oklahoma City. The trapping and modification work was done under the direction of the Pink Bollworm Laboratory at Brownsville, Texas.

SURVEYS

Spruce Budworm Survey

At the request of the Forest Service, a survey to chart spruce budworm damage on timbered land in the States of Arizona and New Mexico was conducted during 1954. The Cessna 180 airplane with pilot was assigned to the work. The survey was made in such a manner as to give a good cross-section picture of the number and intensity of infestations for comparison with surveys of previous years.

Pine Bark Beetle Survey

Following the spruce budworm survey, the pilot and airplane went to the Forest Insect and Disease Laboratory, Fort Collins, Colorado, to examine bark beetle infested areas in Colorado and Wyoming. The survey resulted in the discovery of new infestations in remote forest regions. Since much of the work involved rough mountainous terrain, such an intensive reconnaissance would have been almost impossible without aircraft.

Larch Sawfly Survey

At the request of the Forest Insect Laboratory, St. Paul, Minnesota, a pilot with the Cessna 180 airplane assisted in a larch sawfly survey in the northern half of Minnesota.

Forest Insect Survey - Washington

The Pacific Northwest Forest and Range Experiment Station, Portland, Oregon, requested the services of a pilot and airplane for a general forest insect survey in the State of Washington. Following the completion of the larch sawfly survey in Minnesota, a pilot with the Cessna 180 assisted with this survey.

Forest Insect Survey - California

The Cessna 180 and pilot were provided for a regional forest insect-damage survey in California. The Division of Forest Insect Research, Berkeley, California, directed the work which was conducted in close cooperation with the California State Division of Forestry and the National Park Service.

Forest Insect Survey - Arizona and New Mexico

The Center collaborated with the Forest Insect and Disease Laboratory, Albuquerque, New Mexico, in a general survey to determine the location and intensity of forest insect infestations in the States of Arizona and New Mexico. Surveys were also made of known infested areas to check the density and extent of infestations as compared with conditions prevailing there during the previous year.

Gypsy Moth Survey

The Piper Cub and a pilot were furnished for a gypsy moth aerial defoliation survey conducted in New York, Massachusetts, Vermont, New Hampshire, Rhode Island, and Maine. Information as to the location and extent of defoliation will be used to determine the areas to which future control measures should be applied. Size of acreage surveyed exceeded that of previous years.

Oak Wilt Survey

At the request of the Division of Forest Disease Research, Southeastern Forest Experiment Station, Asheville, North Carolina, the services of the Cessna 170 airplane and pilot were provided for an oak wilt survey south of regions where the disease was known to occur. The primary purpose of the survey was to obtain a general over-all picture of conditions of oak trees in areas previously known to be uninfected and to locate areas where there was evidence of spread. The oak wilt observations were made in northern Arkansas, western Tennessee, the northern half of Mississippi, and most of Kentucky.

Southern Pine Beetle Survey

The Cessna 170 airplane with pilot was assigned to the Southern Forest Experiment Station, Gulfport, Mississippi, for a regional survey of the southern pine beetle damage on Federal, State, and privately-owned timberlands. Approximately 30,000 square miles of forest land were examined in the northern half of Alabama, north and southwest Mississippi, southern Arkansas, north Louisiana, and east Texas.

AIRCRAFT MAINTENANCE AND MODIFICATION

Douglas #1

In line with the Branch policy to perform all control work on cooperative programs under contract at the earliest practicable time, it was decided that remaining aircraft used primarily for such operations would be disposed of. The Branch-owned Douglas C-47 was therefore declared surplus and transferred to the Forest Service.

In conjunction with this transfer, a request was made by the Forest Service for the Aircraft and Special Equipment Center to determine requirements for equipping the plane for hauling fire-fighting crews, smoke-jumpers, and cargo as well as for spraying. As a result of this request, assistance was given toward preparing specifications and soliciting bids for the work required and the airplane was flown to Love Field, Dallas, Texas, where the work was accomplished. The Center removed the spray-bait hydraulic drive system before the C-47 was delivered for modification. This work and the special expenses incurred in making current inspections of the progress of the contract was done at the expense of the Forest Service through a transfer of funds.

In addition to the Douglas C-47 itself, other transfers to the Forest Service included a complete stock of spare C-47 parts.

Douglas #2

The Navy-owned Douglas C-47 was returned to the Navy and delivered to the Naval Air Station, Jacksonville, Florida. Due to the anticipated use of the Forest Service C-47 for forest insect control work, the spraying equipment was removed from the Navy airplane and transferred to the Forest Service. This work was done at the expense of the Forest Service through a transfer of funds.

Cessna 170 #3

A top overhaul was required on the engine installed in this airplane. Precision machine work, such as cylinder grinding, was done by an approved overhaul facility. The airplane was in good condition and needed only a thorough inspection to ready it for another season.

Stearman #6

The radio transmitter and receiver of this airplane was stolen in 1953 and replaced before the airplane was sent into the field for another season's work. This replacement radio equipment was removed from Stearman #7. Minor maintenance was required to ready the airplane for another season.

Stearman #10

Prior to the 1954 Mormon cricket season, the spreader was removed from N3N #11 and modified to fit the fiberglass hopper-tank of this airplane.

At the time of this conversion, a hopper gate and control mechanism was built and adapted for use with the bait distributing system.

During the season, the lower-right wing was damaged in a landing accident involving a seasonal pilot. The damage was sufficient to prevent the continued operation of the airplane. However, the wing was replaced by a repair facility to permit the prompt resumption of work.

Cessna 180 #12

Prior to the season, factory-recommended modifications on the propeller, engine mount, and engine crankcase were complied with. In each case the alterations had a definite connection with improving the safety or efficiency of the aircraft.

The controllable-pitch propeller was modified by the manufacturer and installed in a different position on the crankshaft to reduce vibration and crankshaft stresses.

The engine mount was strengthened by the addition of a factory-recommended brace.

The engine crankcase breather was replaced by a greatly improved type and relocated at the rear of the engine to prevent serious loss of engine oil.

Piper Super-Cub #14

In conformance with the decision to equip as many as possible of the Center's aircraft for the widest possible variety of work assignments, a spray system capable of dispersing large volumes of insecticide was installed in this airplane.

A high-volume centrifugal pump with mounting bracket was purchased and installed. An aluminum boom of increased diameter, to which a variety of nozzles can be attached, was located beneath the wings. This installation may be employed for most spray jobs including those requiring heavy outputs of spray material.

As a safety measure, a 5-inch dump valve capable of emptying the plane's load of 110 gallons in approximately eleven seconds was installed for emergency use.

Some minor maintenance was required on the airframe to prepare it for relicense.

Beechcraft C18S #N20D

The Forest Service requested assistance in the inspection of several twin-engine Beechcraft airplanes that had been declared surplus by the CAA. One was selected, overhauled and modified by the Center through a transfer-of-funds arrangement.

Both engines were replaced with major-overhauled engines supplied by the CAA.

The engine oil systems were dismantled, cleaned, and repaired. Replacement parts were installed where needed.

A thorough inspection and indicated maintenance was performed on the airframe to prepare the airplane for relicensing.

VEHICLE INVENTORY

The following list covers vehicles at Oklahoma City and all Branch aircraft.

On Hand January 1, 1954

Type	Reg. No.	Br. No.	Location
Douglas	N75029	1	Okla. City
*Douglas	N816	2	Okla. City
Cessna 170B	N2234D	3	Okla. City
Cessna 195	N9354A	4	Beltsville
Cessna 170B	N2494D	5	Portland
Stearman	N55692	6	Okla. City
Stearman	N1380V	7	Okla. City
Stearman	N9487H	8	Beltsville
Stearman	N9488H	9	Beltsville
Stearman	N1218N	10	Okla. City
N3N	N45009	11	Okla. City
Cessna 180	N1643C	12	Okla. City
N3N	N45036	13	Forest Grove
Piper Super Cub	N1908A	14	Okla. City
**Ford Sedan '50	A41771		Okla. City
Ford Sedan '52	A44404		Okla. City
Ford Pickup '50	A35357		Okla. City
Internat'l 2T Truck '50	A36723		Okla. City
Towmotor Fork Lift	10353634		Okla. City
Farmall Tractor	A3359		Okla. City

*On lease from the Navy Department.
**Loaned to Mexican Fruit Fly and Citrus Blackfly Control.

Disposals - 1954

Type	Reg. No.	Disposition
Douglas	N75029	Trans. to For. Ser.
Douglas	N816	Returned to Navy
Cessna 195	N9354A	Trans. to For. Ser.
Cessna 170B	N2494D	Trans. to For. Ser.
Stearman	N1318V	Declared Surplus
Stearman	N9487H	Trans. to For. Ser.
Stearman	N9488H	Trans. to For. Ser.
N3N	N45009	Declared Surplus
N3N	N45036	Trans. to Ent. Res.
Ford Sedan '50	A41771	Trans. to Mex. Fr. Fly
*Ford Sedan '52	A44404	Trans. to Barb. Erad.
Farmal Tractor	A3359	Trans. to San Antonio

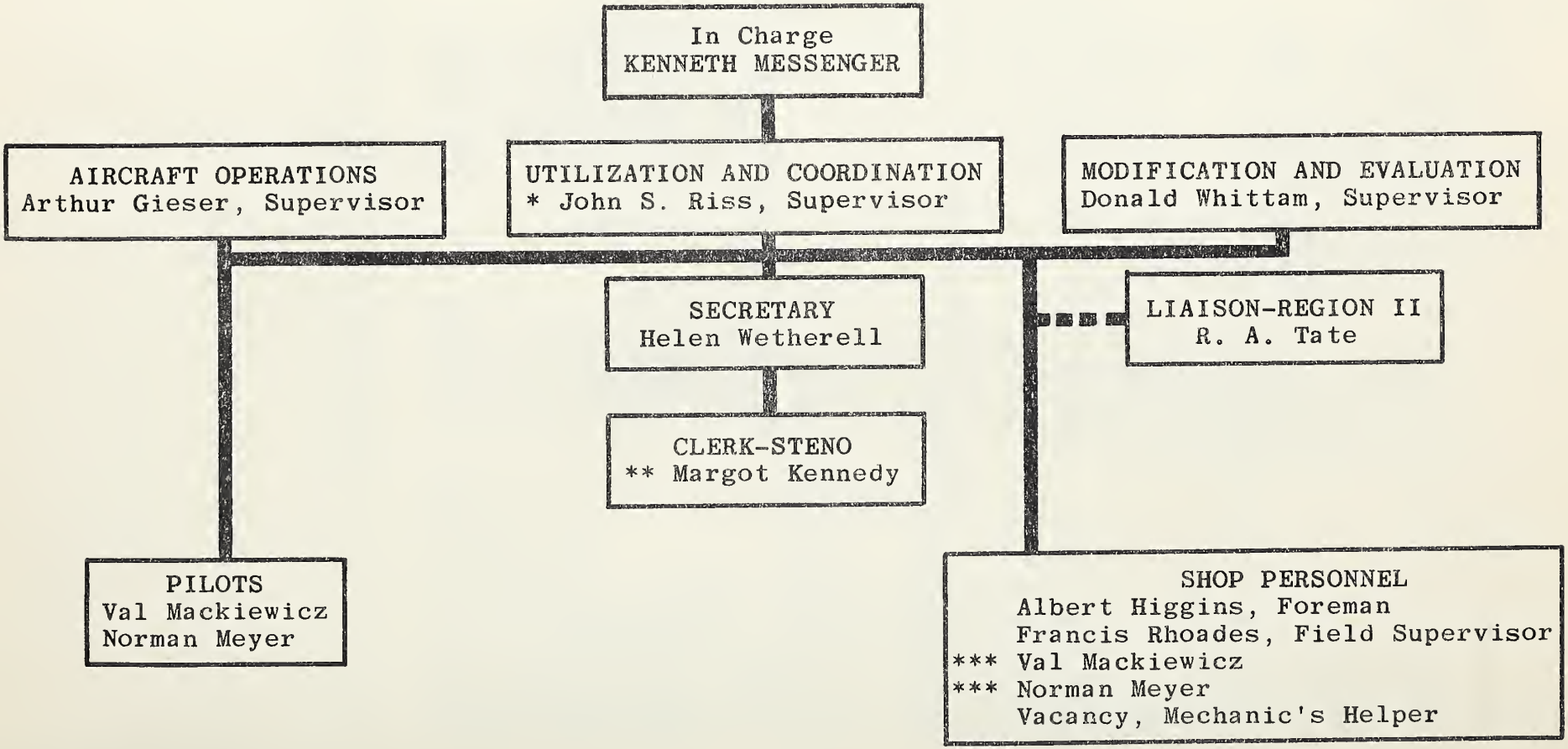
*Transferred to Barberry Eradication Project in return for Pontiac Sedan A39946.

On Hand December 31, 1954

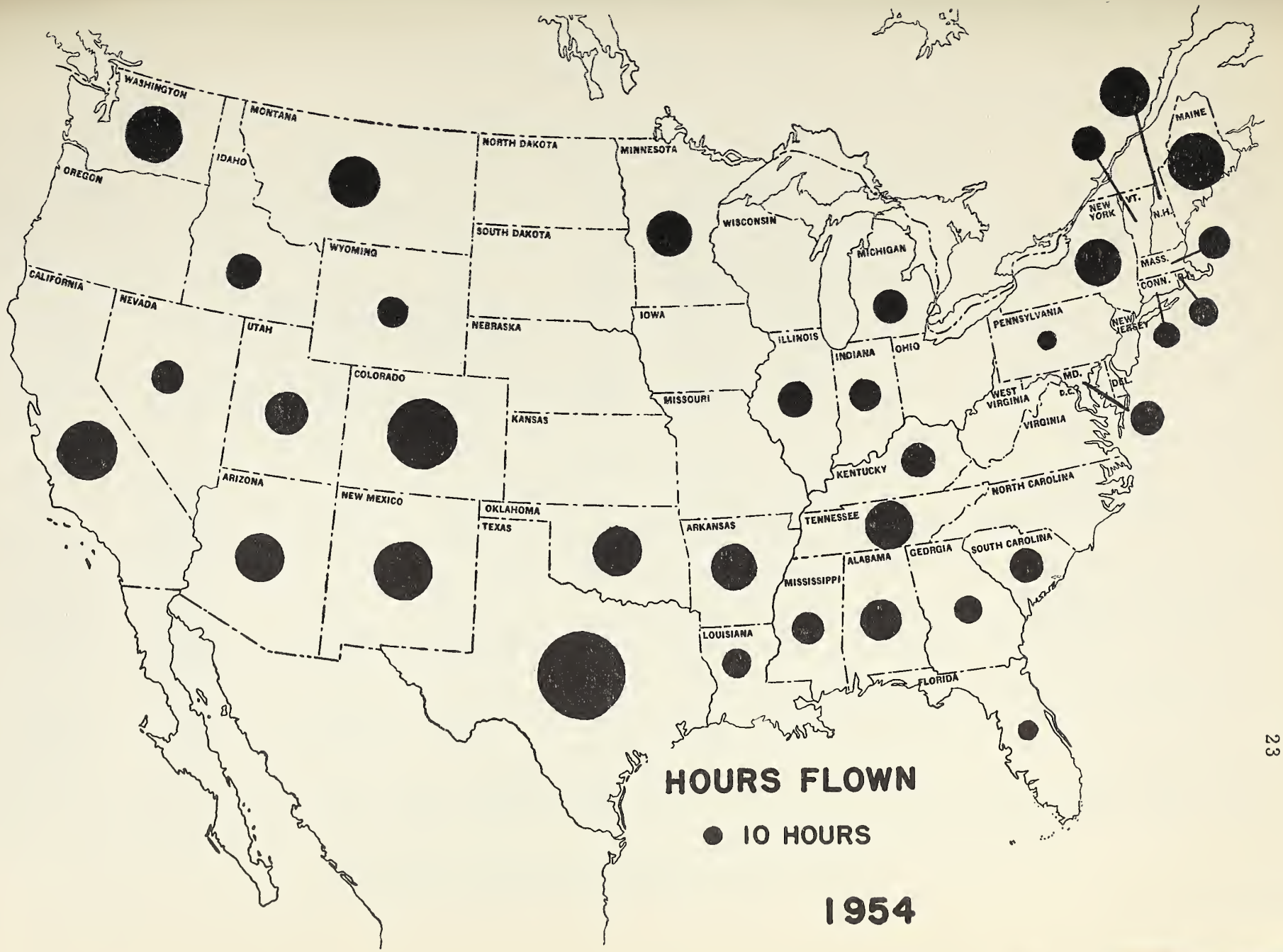
Type	Reg. No.	Br. No.	Location
Cessna 170B	N2234D	3	Beltsville
Stearman	N55692	6	Beltsville
Stearman	N1218N	10	Beltsville
Cessna 180	N1643C	12	Beltsville
Piper Super Cub	N1908A	14	Beltsville
Pontiac Sedan	A39946		Beltsville
Ford Pickup '50	A35357		Beltsville
Internat'l 2T Tr. '50	A36723		Beltsville
Towmotor Fork Lift	10353634		Beltsville

ORGANIZATION CHART

AIRCRAFT & SPECIAL EQUIPMENT CENTER
Methods Improvement Section
Plant Pest Control Branch
U. S. Department of Agriculture



* Transferred to Branch Administrative Office September 1954
** Employed half time by Economic Insect Survey Section
*** Works as mechanic when not flying


WASHINGTON
OREGON
CALIFORNIA
NEVADA
IDAHO
MONTANA
WYOMING
UTAH
ARIZONA
COLORADO
NEW MEXICO
NORTH DAKOTA
SOUTH DAKOTA
NEBRASKA
KANSAS
OKLAHOMA
TEXAS
MINNESOTA
IOWA
MISSOURI
ARKANSAS
LOUISIANA
WISCONSIN
ILLINOIS
MICHIGAN
INDIANA
OHIO
KENTUCKY
TENNESSEE
MISSISSIPPI
ALABAMA
GEORGIA
FLORIDA
SOUTH CAROLINA
NORTH CAROLINA
VIRGINIA
WEST VIRGINIA
PENNSYLVANIA
NEW YORK
MD.
D.C.
DEL.
NEW JERSEY
VT.
N.H.
MAINE
MASS.
CONN.
R.I.
HOURS FLOWN
● 10 HOURS
1954

AIRCRAFT FIELD ASSIGNMENTS DURING 1954

MAKE	Reg. No.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Douglas	75029			P	P								
Douglas	816				P								
Cessna	2234D			Q	E		A	A K	K G	G		P	
Stearman	55692	Q	Q M	M	D F	D			P		D P		
Stearman	1380V		Q			Q	N						
Stearman	1218N			Q	Q	C	C	C P					
Cessna	1643C				A	A B	BAH	H	I	I J	J P	P	
Piper	1908A			Q	Q	Q	N	O	L O	L		P	Q

PROJECT	WORK LOCATION	CODE
*Grasshopper	Texas N.Mex. Colorado	A
*Gypsy Moth	Me.Mass.N.H.Vt.N.Y.Conn.Pa.	B
M. Cricket	Utah,Nev.Wyo.Mont.Ida.	C
Jap. Beetle	Ill.Ind.Mich.	D
Forest Survey	Texas	E
European Chafer	New York	F
Forest Survey	Miss.La.Ala.Ark.Tex.	G
Forest Survey	Colo.N.Mex.Ariz.	H
Forest Survey	Minn.Wash.	I

PROJECT	WORK LOCATION	CODE
Forest Survey	Cal. N.Mex. Ariz.	J
Forest Disease Survey	Ark.Tenn.Miss.Ky.	K
Pink Bollworm	Texas	L
White-Fringed Beetle	Ala.Ga.S.C.	M
Brush Control	Okla.	N
Gypsy Moth Survey		O
Ferrying		P
Tests and Evaluation		Q

*Contract Supervision

AIRCRAFT OPERATIONS - 1954

Cost (in dollars) of Work Done by Aircraft of the Aircraft and Special Equipment Center

Aircraft	Gas and Oil Cost	Mtce. and Repair 1/	Engine Depreciation 2/	Aircraft Depreciation 3/	Total Costs	Hours Flown	Av. Cost per Hour	Project
Piper	52	219	22	36	329	22		Air. & Sp. Eq. Center
1908A	276	44	109	183	612	109		Pink Bollworm
	16	120	7	11	154	7		Brush Control
	359	80	143	240	822	143		Gypsy Moth
Totals	703	463	281	470	1917	281	6.82	
Cessna	20	19	8	22	69	7		Air. & Sp. Eq. Center
2234D	96	38	51	130	315	40		Grasshopper
	563	301	230	598	1692	184		Forest Service
Totals	679	358	289	750	2076	231	8.99	
Cessna	14	274	14	13	315	4		Air. & Sp. Eq. Center
1643C	234	35	207	203	679	59		Gypsy Moth
	136	6	119	117	378	34		Grasshopper
	1367	438	1085	1067	3957	310		Forest Service
Totals	1751	753	1425	1400	5329	407	13.09	
Stearman	213	504	96	88	901	24		Air. & Sp. Eq. Center
55692	341	42	156	145	684	39		White-Fringed Beetle
	506	71	288	267	1132	72		Japanese Beetle
Totals	1060	617	540	500	2717	135	20.13	
Stearman	28	111	12	10	161	3		Air. & Sp. Eq. Center
1218N	1266	350 4/	552	490	2658	138		Mormon Cricket 5/
Totals	1294	461	564	500	2819	141	19.99	

1/ Includes mechanic's salary and expenses, pilot's salary while working in shop, hired maintenance, and all parts.

2/ Engine depreciation computed on hourly basis for replacement or major overhaul.

3/ Aircraft depreciation computed at purchase price, amortized in 10-year period.

4/ Replaced damaged wing.

5/ Baited 25,246 acres.